

ifw

PTO/SB/21 (08-03)

Approved for use through 07/31/2006. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/708,056
	Filing Date	February 5, 2004
	First Named Inventor	Edmund M. Clarke
	Group Art Unit	3618
	Examiner Name	
Total Number of Pages in This Submission	Attorney Docket Number	361007-000031

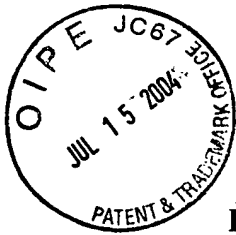
ENCLOSURES (check all that apply)		
<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached  <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s)  <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input checked="" type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Documents  <input type="checkbox"/> Response to Missing Parts/ Incomplete Application  <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group ( <i>Appeal Notice, Brief, Reply Brief</i> ) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): *Acknowledgement Postcard *19 cited references
Remarks		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual Name	CHARLES L. MOORE (REG. NO. 33,742) MOORE & VAN ALLEN
Signature	
Date	July 13, 2004

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.	
Typed or printed name	Katie M. Efland
Signature	
Date	July 13, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Edmund M. Clarke

Group Art Unit:

Serial Number: 10/708,056

Examiner:

Filed: February 5, 2004

For: METHOD AND SYSTEM TO VERIFY A CIRCUIT DESIGN

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**  
**UNDER 37 C.F.R. § 1.56 AND 37 C.F.R. § 1.97**

It is respectfully requested that the documents listed on the attached Form PTO/SB/08A be considered by the Patent and Trademark Office in the above-referenced application and made of record therein. A full text copy of the relevant documents are enclosed. This information disclosure statement submitted herewith is being filed within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last.

Respectfully submitted,

By: Charles L. Moore  
Charles L. Moore  
Registration No. 33,742  
Attorney for Applicant  
Moore & Van Allen, PLLC  
2200 West Main Street, Suite 800  
Durham, NC 27705  
Phone: 919-286-8000  
Facsimile: 919-286-8199

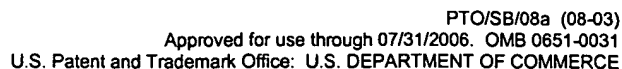
July 13, 2004

Date

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the US Postal Service as first class mail on July 13, 2004, in an envelope addressed to Commissioner of Patents, PO Box 1450, Alexandria, VA 22313-1450

Katie M. Efland  
Katie M. Efland



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

**Complete if Known**

*(use as many sheets as necessary)*

Sheet	1	of	3	Attorney Docket Number	361007-000031
-------	---	----	---	------------------------	---------------

[illegible]

Examiner Initials <sup>1</sup>	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>2</sup>
		Country Code <sup>3</sup> –Number <sup>4</sup> –Kind Code <sup>5</sup> (if known)				

Examiner  
Signature

Date  
Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 1 Applicant's unique citation designation number (optional). 2 See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. 3 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. 6 Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	10/708,056
				Filing Date	February 5, 2004
				First Named Inventor	Edmund M. Clarke
				Art Unit	
Examiner Name					
Sheet	2	of	3	Attorney Docket Number	361007-000031

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	B	Carl Pixley, Guest Editor's Introduction: Formal Verification of Commercial Integrated Circuits. IEEE Design & Test of Computers, 18(4):4-5, 2001.	
	C	Armin Biere, Alessandro Cimatti, Edmund M. Clarke, and Yunshan Yhu. Symbolic model checking without BDDs. In Tools and Algorithms for Construction and Analysis of Systems, pages 193-207, 1999.	
	D	A. Biere, E. Clarke, R. Raimi, and Y. Zhu. Verifying safety properties of a Power PC <sup>TM</sup> microprocessor using symbolic model checking without BDDs. In N. Halbwachs and D. Peled, editors, Proceedings of the 11 <sup>th</sup> International Conference on Computer Aided Verification (CAB 99), Lecture Notes in Computer Science. Springer Verlag, 1999.	
	E	A. Biere, A. Cimatti, E.M. Clarke, M. Fujita, and Y. Zhu. Symbolic model checking using SAT procedures instead of BDDs. In Design Automation Conference (DAC '99), 1999.	
	F	Joao P. Marques-Silva and Karem A. Sakallah. GRASP – A New Search Algorithm for Satisfiability. In Proceedings of IEEE/ACM International Conference on Computer-Aided Design, pages 220-227, November 1996.	
	G	Matthew W. Moskewicz, Conor F. Madigan, Ying Zhao, Lintao Zhang, and Sharad Malik. Chaff: Engineering an efficient SAT solver. In Proceedings of the 38 <sup>th</sup> Design Automation Conference (DAC '01), June 2001.	
	H	D. Kroening and O. Strichman. Efficient computation of recurrence diameters. In Proceedings of the Fourth International Conference on Verification, Model Checking and Abstract Interpretation. Springer, 2003. To appear.	
	I	O. Shtrichman. Tuning SAT checkers for bounded model checking. In E.A. Emerson and A.P. Sistla, editors, Proceedings of the 12 <sup>th</sup> International Conference on Computer Aided Verification (CAV 2000), Lecture Notes in Computer Science. Springer Verlag, 2000.	
	J	Fady Cooty, Limor Fix, Ranan Fraer, Enrico Giunchiglia, Gila Kamhi, Armando Tacchella, and Moshe Y. Vardi. Benefits of bounded model checking at an industrial setting. In Gerard Berry, Hubert Comon, and Alain Finkel, editors, Proceedings of the 13 <sup>th</sup> International Conference on Computer Aided Verification (CAV 2001), number 2102 in Lecture Notes in Computer Science, pages 436-453. Springer Verlag, 2001.	
	K	Per Bjesse, Tim Leonard, and Abdel Mokkedem. Finding bugs in an Alpha microprocessor using satisfiability solvers. In Gerard Berry, Hubert Comon, and Alain Finkel, editors, Proceedings of the 13 <sup>th</sup> International Conference on Computer Aided Verification (CAV 2001), number 2102 in Lecture Notes in Computer Science, pages 454-464. Springer Verlag, 2001.	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(use as many sheets as necessary)</i>				<b>Complete if Known</b>	
				Application Number	<b>10/708,056</b>
				Filing Date	<b>February 5, 2004</b>
				First Named Inventor	<b>Edmund M. Clarke</b>
				Art Unit	
				Examiner Name	
Sheet	3	of	3	Attorney Docket Number	<b>361007-000031</b>

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	L	Luc Semeria, Andrew Seawright, Renu Mehra, Daniel Ng, Arjuna Ekanayake, and Barry Pangre. RTL C-based methodology for designing and verifying a multi-threaded processor. In Proc. Of the 39 <sup>th</sup> Design Automation Conference ACM Press, 2002.	
	M	I. Page. Constructing Hardware-Software Systems from a Single Description. Journal of VLSI Signal Processing, 1291:87-107, 1996.	
	N	A. Pnueli, M. Siegel, and O. Shtrichman. The code validation tool (CVT) – automatic verification of a compilation process. Int. Journal of Software Tools for Technology Transfer (STTT), 2(2):192-201, 1998.	
	O	R. Cytron, J. Ferrante, B.K. Rosen, M.N. Wegman, and F.K. Zadeck. An efficient method of computing static single assignment form. In Proceedings of the 16 <sup>th</sup> ACM SIGPLAN-SIGACT symposium on Principles of programming languages, pages 25-35. ACM Press, 1989.	
	P	David W. Currie, Alan J. Hu, and Sreeranga Rajan. Automatic formal verification of dsp software. In Proceedings of the 37 <sup>th</sup> Design Automation Conference (DAC 2000), pages 130-135. ACM Press, 2000.	
	Q	Kiyoharu Hamaguchi. Symbolic simulation heuristics for high-level design descriptions with uninterpreted functions. In International Workshop on High-Level Design, Validation, and Test, pages 25-30. IEEE, 2001.	
	R	C. Blank, H. Eveking, J. Levihn, and G. Ritter. Symbolic simulation techniques – state of the art and applications. In International Workshop on High-Level Design, Validation, and Test, pages 45-50. IEEE, 2001.	
	S	Apt., Krzysztof R. Logics and Models of Concurrent Systems, NATO ASI Series, Series F: Computer and System Sciences, Vol. 13.	

Examiner Signature		Date Considered	
--------------------	--	-----------------	--

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO:

Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.